

TEST REPORT

Applicant: TFIVE PTY LTD
Address: 10/29 Lorne Ave Killara NSW 2071 Australia
Equipment Type: Smart Door Lock A100
Model Name: ZNMS02ES
Brand Name: Aqara
Test Standard: AS/NZS 4268:2017
Test Date: Jun. 07, 2022
Date of Issue: Jul. 04, 2022

ISSUED BY:

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Revision History

| Version | Issue Date | Revisions Content |
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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

| | |
|--------------|--|
| Company Name | Shenzhen BALUN Technology Co., Ltd. |
| Address | Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China |
| Phone Number | +86 755 6685 0100 |

1.2 Identification of the Responsible Testing Location

| | |
|---------------|--|
| Test Location | Shenzhen BALUN Technology Co., Ltd. |
| Address | Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China |
| Description | All measurement facilities used to collect the measurement data are located at Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China. |

2 PRODUCT INFORMATION

2.1 Applicant Information

| | |
|-----------|--|
| Applicant | TFIVE PTY LTD |
| Address | 10/29 Lorne Ave Killara NSW 2071 Australia |

2.2 Manufacturer Information

| | |
|--------------|--|
| Manufacturer | Lumi United Technology Co., Ltd. |
| Address | Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China |

2.3 Factory Information

| | |
|---------|-----|
| Factory | N/A |
| Address | N/A |

2.4 General Description for Equipment under Test (EUT)

| | |
|---|----------------------|
| EUT Name | Smart Door Lock A100 |
| Model Name Under Test | ZNMS02ES |
| Series Model Name | N/A |
| Description of Model name differentiation | N/A |
| Hardware Version | V1.3.1 |
| Software Version | V0002 |
| Dimensions (Approx.) | N/A |
| Weight (Approx.) | N/A |

2.5 Technical Information

| | |
|-----------------------------------|------------------------|
| Network and Wireless connectivity | Bluetooth, Zigbee, NFC |
|-----------------------------------|------------------------|

The requirement for the following technical information of the EUT was tested in this report:

| | |
|-------------------------|---|
| Modulation Type | ASK |
| Frequency Range | 13.56 MHz |
| Product Class | 1 |
| Receiver Categorization | 3 |
| Number of channel | 1 |
| Tested Channel | 1 |
| Antenna Type | Coil Antenna |
| About the Product | The equipment is Smart Door Lock A100, intended for used with information technology equipment. Only NFC was tested in this report. |

Note: The above EUT information in section 2.4 and 2.5 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

The EUT has been tested according to ETSI EN 300 330 V2.1.1 (2017-02).

| No. | Identity | Document Title |
|-----|----------------------------------|---|
| 1 | AS/NZS 4268:2017 | Radio equipment and systems - Short range devices - Limits and methods of measurement |
| 2 | ETSI EN 300 330 V2.1.1 (2017-02) | Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU |

3.2 Verdict

| Report Section | Standard Rule | Description | Result |
|--------------------------|---------------|--|--------|
| Transmitter requirements | | | |
| 5.1.1 | 4.3.1 | Permitted range of operating frequencies | Pass |
| 5.1.2 | 4.3.2 | Operating frequency ranges | Pass |
| 5.1.3 | 4.3.3 | Modulation bandwidth | Pass |
| 5.1.4 | 4.3.4 | Transmitter H-field requirements (only applies to product class 1 and class 2) | Pass |
| -- | 4.3.5 | Transmitter RF carrier current (only applies to product class 3) | N/A |
| -- | 4.3.6 | Transmitter radiated E-field (only applies to product class 4) | N/A |
| -- | 4.3.7 | Transmitter conducted spurious emissions (only applies to product class 3 and their power or current level in an artificial antenna (conducted spurious emission)) | N/A |
| 5.1.5 | 4.3.8 | Transmitter radiated spurious domain emission limits < 30 MHz | Pass |
| 5.1.6 | 4.3.9 | Transmitter radiated spurious domain emission limits > 30 MHz | Pass |
| -- | 4.3.10 | Transmitter Frequency stability (only applies to channelized systems where channel limits are defined) | N/A |
| Receiver requirements | | | |
| 5.2.1 | 4.4.2 | Receiver spurious emissions | Pass |
| -- | 4.4.3 | Adjacent channel selectivity (only for channelized systems in the 27 MHz range) | N/A |
| -- | 4.4.4 | Receiver blocking or desensitization (only applicable for channelized systems where channel definitions are used.) | N/A |

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

| Measurement | Value |
|-----------------------------------|---------|
| Radiated emissions (9 kHz–30 MHz) | 4.28 dB |
| Radiated emissions (30 MHz–1 GHz) | 4.80 dB |
| Radiated emissions (1 GHz–18 GHz) | 4.88 dB |

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

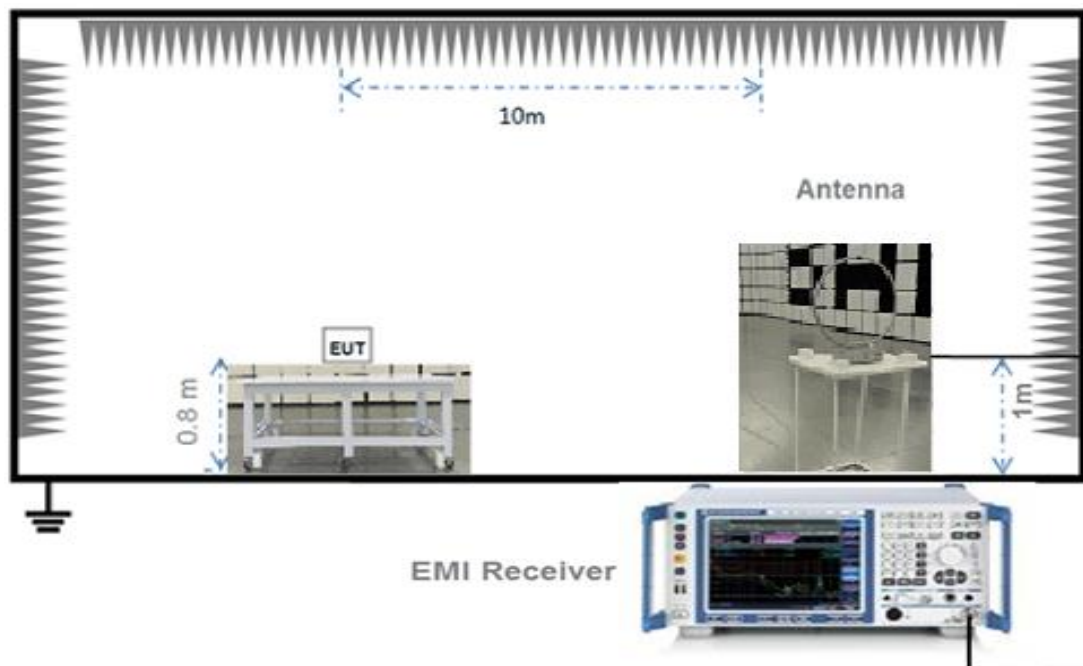
| | | |
|----------------------------|-------------------------|--------------|
| Relative Humidity | 30% to 60% | |
| Atmospheric Pressure | 100 kPa to 102 kPa | |
| Temperature | NT (Normal Temperature) | +22℃ to +25℃ |
| | LT (Low Temperature) | -20℃ |
| | HT (High Temperature) | +55℃ |
| Working Voltage of the EUT | NV (Normal Voltage) | 5.0V |
| | LV (Low Voltage) | 4.8 V |
| | HV (High Voltage) | 5.5 V |

4.2 Test Equipment List

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|-----------------------------------|----------------------------|--------------------|------------|------------|------------|
| EMI Receiver | ROHDE&SCHWARZ | ESRP | 101036 | 2021.10.10 | 2022.10.09 |
| EMI Receiver | KEYSIGHT | N9038A | MY53220118 | 2021.09.13 | 2022.09.12 |
| EMI Receiver | KEYSIGHT | N9038A | MY55330120 | 2021.10.20 | 2022.10.19 |
| DC Power Supply | ROHDE&SCHWARZ | HMP2020 | 018141664 | 2022.05.23 | 2023.05.22 |
| Power Sensor | ROHDE&SCHWARZ | NRP-Z21 | 103971 | 2021.06.01 | 2022.05.31 |
| Power Splitter | KMW | DCPD-LDC | 1305003215 | -- | -- |
| Attenuator (20 dB) | KMW | ZA-S1-201 | 110617091 | -- | -- |
| Attenuator (6 dB) | KMW | ZA-S1-61 | 1305003189 | -- | -- |
| Test Antenna-Loop(9 kHz-30 MHz) | SCHWARZBECK | FMZB 1519 | 1519-037 | 2021.04.16 | 2024.04.15 |
| Test Antenna-Bi-Log(30 MHz-3 GHz) | SCHWARZBECK | VULB 9163 | 9163-624 | 2021.08.20 | 2024.08.19 |
| Temperature Chamber | AHK | SP20 | 1412 | 2021.11.30 | 2022.11.29 |
| Anechoic Chamber | EMC TECHNOLOGY LTD | 21.1m*11.6 m*7.35m | N/A | 2021.08.15 | 2024.08.14 |
| Anechoic Chamber | CHANGNING | 9m*6m*6m | N/A | 2020.03.16 | 2023.03.15 |
| Shielded Enclosure | YiHeng Electronic Co., Ltd | 3.5m*3.1m*2.8m | N/A | 2022.02.19 | 2025.02.18 |

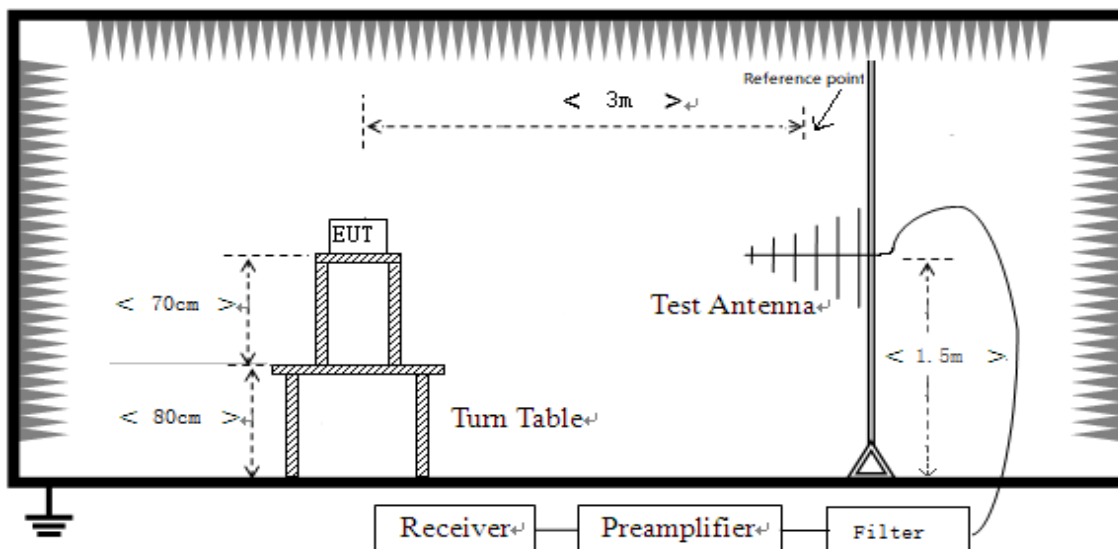
4.3 Description of Test Setup

4.3.2 For Radiated Test (Below 30 MHz)



(Diagram 1)

4.3.3 For Radiated Test (30 MHz-1 GHz)



(Diagram 2)

4.4 Receiver categorization

| Technologies | Receiver spurious emission | Adjacent channel selectivity | Blocking or desensitization |
|-----------------------------|----------------------------|------------------------------|-----------------------------|
| tagging systems | yes | no (note 2) | no (note 1) |
| systems in the 27 MHz range | yes | yes | yes |
| all others | yes | no (note 2) | yes |

NOTE 1: Blocking or desensitization not needed because of the physical co-location of RX to TX in tagging systems where the RX and TX operate simultaneously. The TX signal is used for the RX baseband mixing. The TX signal at the RX input is about 90 dB above the receiver sensitivity or tagging signal level the receiver (see ETSI TR 103 059 [i.9], figure 8). Furthermore given the very short communication ranges for most applications (e.g. NFC, RFID), a given interference blocking signal will have to be about 90 dB higher as the transmitter signal at the transceiver antenna, which is unlikely to happen.

NOTE 2: This requirement can only be required where a frequency plan with standard channel spacing is consistently used, for example in the 27 MHz band.

4.5 Product classes

| Product Class | Description of transmitter | Antenna to be tested | Frequency range | Loop antenna area | Length of antenna (= maximum dimension of the antenna) | Customization of antenna design allowed | Transmitter carrier output limits | Spurious emissions limits |
|---------------|---|---|------------------|----------------------------------|---|---|--|---|
| 1 | Inductive loop coil transmitter | Integral antenna (antenna type 1) or dedicated antenna supplied with the equipment (antenna type 2); (see note 1) | 9 kHz to 30 MHz | < 30 m ² | < $\lambda/4$ (75 metres/f where f is in MHz) or < 30 m, whichever is shorter | No | H-field at 10 m (see clause 4.3.4.3) | H-field at 10 m (see clauses 4.3.8.3 and 4.3.9.3) |
| 2 | Inductive loop coil transmitter | Two representative antennas supplied with the equipment (see note 2) | 9 kHz to 30 MHz | < 30 m ² (see note 3) | < $\lambda/4$ (75 metres/f where f is in MHz) or < 30 m, whichever is shorter | Yes (see note 3) | H-field at 10 m (see clause 4.3.4.3) | H-field at 10 m (see clauses 4.3.8.3 and 4.3.9.3) |
| 3 | Customized, large size loop antennas only | Test without an antenna by using an artificial antenna | 9 kHz to 135 kHz | > 30 m ² | n.a. | Yes | Current in artificial antenna (see note 4 and clauses 4.3.4.3 and 4.3.6.3) | Current in artificial antenna (see note 4 and clauses 4.3.7.3 and 4.3.19.3) |
| 4 | E-field transmitter | Each type of antenna to be used | 9 kHz to 30 MHz | n.a. | n.a. | n.a. | H-field at 10 m (see clause 4.3.6.3) | H-field at 10 m (see clauses 4.3.8.3 and 4.3.9.3) |

NOTE 1: Where a manufacturer provides a range of standard antennas, the equipment will be tested as Product Class 1 equipment, with the antenna(s) attached.

The measurements shall be repeated for each antenna.

NOTE 2: The two antennas shall meet the manufacturer's design rules published in the equipment manual and shall have maximum and minimum loop areas respectively. Both antennas shall have the maximum magnetic dipole moment as declared by the manufacturer.

NOTE 3: Customization is only allowed according to the manufacturer's antenna design rules published in the equipment manual.

NOTE 4: ON-site measurements may be required.

4.6 Measuring receiver

| Frequency | Detector type | Measurement receiver bandwidth | Spectrum analyzer bandwidth |
|----------------------|---------------|--------------------------------|-----------------------------|
| 9 kHz ≤ f < 150 kHz | Quasi Peak | 200 Hz | 300 Hz |
| 150 kHz ≤ f < 30 MHz | Quasi Peak | 9 kHz | 10 kHz |
| 30 MHz ≤ f < 1 GHz | Quasi Peak | 120 kHz | 100 kHz |

NOTE: For the measurement of the ranges 6,765 MHz ≤ f ≤ 6,795 MHz and 11,810 MHz ≤ f ≤ 15,310 MHz, the measurement bandwidth has to be 200 Hz respectively 300 Hz.

4.7 Short Range Devices within the 9 kHz to 30 MHz permitted frequency bands

| | Frequency Bands/frequencies | Applications |
|----------------------|---|---|
| Transmit and Receive | 9 kHz to 90 kHz | Inductive devices, Generic use |
| Transmit and Receive | 90 kHz to 119 kHz | Inductive devices, Generic use |
| Transmit and Receive | 119 kHz to 140 kHz | Inductive devices, Generic use |
| Transmit and Receive | 140 kHz to 148,5 kHz | Inductive devices, Generic use |
| Transmit and Receive | 148,5 kHz to 5 MHz | Inductive devices, Generic use |
| Transmit and Receive | 400 kHz to 600 kHz | RFID only |
| Transmit and Receive | 5 MHz to 30 MHz | Inductive devices, Generic use |
| Transmit and Receive | 3 155 kHz to 3 400 kHz | Inductive devices, Generic use |
| Transmit and Receive | 984 kHz to 7 484 kHz (Note 3, Centre frequency is 4 234 kHz) | Inductive devices, Railway applications |
| Transmit and Receive | 4 516 kHz | Inductive devices, Railway applications |
| Transmit and Receive | 6 765 kHz to 6 795 kHz | Inductive devices, Generic use |
| Transmit and Receive | 7 400 kHz to 8 800 kHz | Inductive devices, Generic use |
| Transmit and Receive | 10 200 kHz to 11,000 MHz | Inductive devices, Generic use |
| Transmit and Receive | 11,810 MHz to 15,310 MHz (Centre frequency is 13,56 MHz) | RFID only |
| Transmit and Receive | 12,5 MHz to 20 MHz | Inductive devices, Wireless healthcare |
| Transmit and Receive | 13,553 MHz to 13,567 MHz | Inductive devices, Generic use |
| Transmit and Receive | 26,957 MHz to 27,283 MHz | Inductive devices, Generic use |
| Transmit and Receive | 27,090 MHz to 27,100 MHz | Inductive devices, Railway applications |

NOTE 1: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 9 kHz to 30 MHz.

NOTE 2: On non-harmonised parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of an Individual Rights for use of spectrum or General Authorization, or as a condition for use under "licence exemption" as it is in most cases for Short Range Devices.

NOTE 3: Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.

5. Test Type and Test Results

5.1. Transmitter Parameters

5.1.1. Permitted range of operating frequencies

5.1.1.1. Limit

The permitted range of operating frequency for intentional emissions shall be from 9 kHz to 30 MHz.

5.1.1.2. Test Setup

The section 4.3.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.1.3. Test Procedure

The permitted range of operating frequencies is the frequency range over which the equipment is authorized to operate.

If more than one modulation scheme can be generated by the EUT, then for each modulation scheme and one typical set of modulation parameters the maximum and minimum frequencies shall be measured and recorded separately.

5.1.1.4. Test Result

Please refer to ANNEX A.1.

5.1.2. Operating frequency ranges

5.1.2.1. Limit

The operating frequency ranges for intentional emissions shall be entirely within the frequency bands in table in section 4.7.

5.1.2.2. Test Setup

The section 4.3.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.2.3. Test Procedure

The operating frequency range (OFR) is the frequency range over which the EUT is transmitting. The operating frequency range of the EUT is determined by the lowest (fL) and highest frequency (fH) as occupied by the power envelope. With the centre frequency of the OFR as: $f_C = (f_H + f_L)/2$. An EUT could have more than one operating frequency range.

5.1.2.4. Test Result

Please refer to ANNEX A.2.

5.1.3. Modulation bandwidth

5.1.3.1. Limit

The modulation bandwidth shall be within the assigned frequency band or $\pm 7.5\%$ of the carrier frequency whichever is the smallest. For RFID and EAS Systems, the modulation bandwidth shall be within the transmitter emission boundary of figures I.1, I.2, I.3 and I.4. For further information, see CEPT/ERC/REC 70-03 [i.1] or ERC/ECC/CEPT Decisions as implemented through National Radio Interfaces (NRI) and additional NRI as relevant.

5.1.3.2. Test Setup

The section 4.3.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.3.3. Test Procedure

The transmitter shall be connected to an artificial antenna or if the transmitter has an integral antenna a test fixture shall be used. The RF output of the equipment shall be connected to a spectrum analyser via a $50\ \Omega$ variable attenuator.

The transmitter shall be operated at the nominal carrier power or field strength measured under normal test conditions.

The measurements shall be made during normal and extreme test conditions. During extreme test conditions, both extreme temperature and voltage apply simultaneously

5.1.3.4. Test Result

Please refer to ANNEX A.3.

5.1.4. Transmitter radiated H-field

5.1.4.1. Limit

The frequency ranges and limits shown in flow table.

H-field limits at 10 m

| Frequency range (MHz) | H-field strength limit (H_f) dB μ A/m at 10 m or specified in mW e.r.p. |
|---|---|
| $0,009 \leq f < 0,090$ | 72 descending 3 dB/oct above 0,03 MHz or according to note 1 (see note 5) |
| $0,09 \leq f < 0,119$ | 42 |
| $0,119 \leq f < 0,135$ | 66 descending 3 dB/oct above 0,119 MHz or according to note 1 (see notes 3 and 5) |
| $0,135 \leq f < 0,140$ | 42 |
| $0,140 \leq f < 0,1485$ | 37,7 |
| $0,1485 \leq f < 30$ | -5 (see note 4) |
| $0,315 \leq f < 0,600$ | -5 |
| $3,155 \leq f < 3,400$ | 13,5 |
| 4,234 | 9 (see note 9) |
| 4,516 | 7 |
| $7,400 \leq f < 8,800$ | 9 |
| $10,2 \leq f < 11,00$ | 9 |
| $12,5 \leq f \leq 20$ | -7 |
| $6,765 \leq f \leq 6,795$ | 42 (see notes 3 and 7) |
| $26,957 \leq f \leq 27,283$ | 42 (see note 3) |
| $13,410 \leq f \leq 13,553$, $13,567 \leq f \leq 13,710$ | 9 (see note 6) |
| $13,110 \leq f \leq 13,410$, $13,710 \leq f \leq 14,010$ | -3,5 (see note 6) |
| $12,660 \leq f \leq 13,110$, $14,010 \leq f \leq 14,460$ | -10 (see note 6) |
| $11,810 \leq f \leq 12,660$, $14,460 \leq f \leq 15,310$ | -16 (see note 6) |
| $13,460 \leq f \leq 13,553$, $13,567 \leq f \leq 13,660$ | 27 (see note 6) |
| $13,360 \leq f \leq 13,460$, $13,660 \leq f \leq 13,760$ | Linear transition from 27 to -3,5 (see note 6) |
| $13,110 \leq f \leq 13,360$, $13,760 \leq f \leq 14,010$ | -3,5 (see note 6) |
| $12,660 \leq f \leq 13,110$, $14,010 \leq f \leq 14,460$ | -5 (see note 6) |
| $13,553 \leq f \leq 13,567$ | 42 (see note 3) or 60 (see notes 2 and 3) |
| 27,095 | 42 |
| 26,995, 27,045, 27,095, 27,145, 27,195 (see note 8) | 100 mW |
| <p>NOTE 1: For the frequency ranges 9 kHz to 135 kHz, the following additional restrictions apply to limits above 42 dBμA/m:</p> <ul style="list-style-type: none"> - for loop coil antennas with an area $\geq 0,16 \text{ m}^2$ this table and table B.1 with the antenna limitations apply; - for loop coil antennas with an area between $0,05 \text{ m}^2$ and $0,16 \text{ m}^2$ table B.1 applies with a correction factor. The limit is: table value + $10 \times \log(\text{area}/0,16 \text{ m}^2)$; - for loop coil antennas with an area $< 0,05 \text{ m}^2$ the limit is 10 dB below table B.1. <p>NOTE 2: For RFID (incl. NFC) and EAS applications only.</p> <p>NOTE 3: Spectrum mask limit, see annex I.</p> <p>NOTE 4: For further information see annex G.</p> <p>NOTE 5: Limit is 42 dBμA/m for the following spot frequencies: 60 kHz \pm 250 Hz, 66,6 kHz \pm 750 Hz, 75 kHz \pm 250 Hz, 77,5 kHz \pm 250 Hz, and 129,1 kHz \pm 500 Hz.</p> <p>NOTE 6: Only in conjunction with spectrum mask, see annex I.</p> <p>NOTE 7: The frequency range 6,765 MHz - 6,795 MHz is not a harmonised ISM frequency band according article 5.138 of the ITU Radio Regulations [i.13].</p> <p>NOTE 8: Center frequencies for channelized systems by using $\leq 10 \text{ kHz}$ bandwidth.</p> <p>NOTE 9: The limit is valid in the range 984 kHz - 7 484 kHz for Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.</p> | |

5.1.4.2. Test Setup

The section 4.3.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.4.3. Test Procedure

The conformance tests for Transmitter radiated H-field shall be as defined in clause 6.2.4 of the present document. Conformance shall be established under test conditions to be declared by the manufacturer according to clause 4.1. The interpretation of the results for the measurements uncertainty shall be as given in clause 5.13.

5.1.4.4. Test Result

Please refer to ANNEX A.4.

5.1.5. Transmitter radiated spurious domain emission limits < 30 MHz

5.1.5.1. Limit

Limits for transmitters spurious emissions in the range from 9 kHz to 30 MHz

Limits for measurements at 10 m distance:

| State | Frequency $9\text{ KHz} \leq f < 10\text{MHz}$ | Frequency $10\text{ MHz} \leq f < 30\text{MHz}$ |
|----------|--|---|
| Transmit | 27 dB μ A/m at 9 kHz descending 3 dB/oct | -3.5 dB μ A/m |
| Standby | 5.5 dB μ A/m at 9 kHz descending 3 dB/oct | -25 dB μ A/m |

5.1.5.2. Test Setup

The section 4.3.2 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.5.3. Test Procedure

The conformance tests for transmitter radiated spurious domain emission limits < 30 MHz shall be as defined in clause 6.2.8 of the present document. Conformance shall be established under test conditions to be declared by the manufacturer according to clause 4.1. The interpretation of the results for the measurements uncertainty shall be as given in clause 5.13.

5.1.5.4. Test Result

Please refer to ANNEX A.5.

5.1.6. Transmitter radiated spurious domain emission limits > 30 MHz

5.1.6.1. Limit

Limits for transmitters spurious emissions in the range from 30 MHz to 1000 MHz

The power of any radiated emission shall not exceed the values as below.

| State | 47 MHz to 74 MHz 87.5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz | Other frequency between 30 MHz to 1000 MHz |
|-----------|---|---|
| Operating | 4 nW e.r.p | 250 nW e.r.p |
| Standby | 2 nW e.r.p | 2 nW e.r.p |

Note 1: The test limit has been transformed to the limit at 3m.

5.1.6.2. Test Setup

The section 4.3.2 (Diagram 2) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.6.3. Test Procedure

The conformance tests for transmitter radiated spurious domain emission limits > 30 MHz shall be as defined in clause 6.2.9 of the present document. Conformance shall be established under test conditions to be declared by the manufacturer according to clause 4.1. The interpretation of the results for the measurements uncertainty shall be as given in clause 5.13.

5.1.6.4. Test Result

Please refer to ANNEX A.6.

5.2. Receiver Parameters

5.2.1. Receiver Spurious Emissions

5.2.1.1. Limit

5.2.1.2. Limits for transmitters spurious emissions in the range from 9 kHz to 30 MHz

Limits for measurements at 10 m distance:

| Frequency $9\text{ KHz} \leq f < 10\text{MHz}$ | Frequency $10\text{ MHz} \leq f < 30\text{MHz}$ |
|--|---|
| 5.5dB μ A/m at 9kHz descending 3 dB/oct | -25 dB μ A/m |

5.2.1.3. Limits for transmitters spurious emissions in the range from 30 MHz to 1000 MHz

The measured values shall not exceed 2 nW e.r.p.

5.2.1.4. Test Setup

See 4.3.1 and 4.3.2 (Diagram 1 and 2) for test setup description for the radiated test. The photo of test setup please refer to ANNEX B.

5.2.1.5. Test Procedure

The measurements of the radiated spurious emissions were made on an anechoic chamber. The spurious emissions produced by the equipment were measured at the distance of 3m. The spurious emissions are measured with a shielded loop antenna connected to a measurement receiver.

5.2.1.6. Test Result

Please refer to ANNEX A.7.

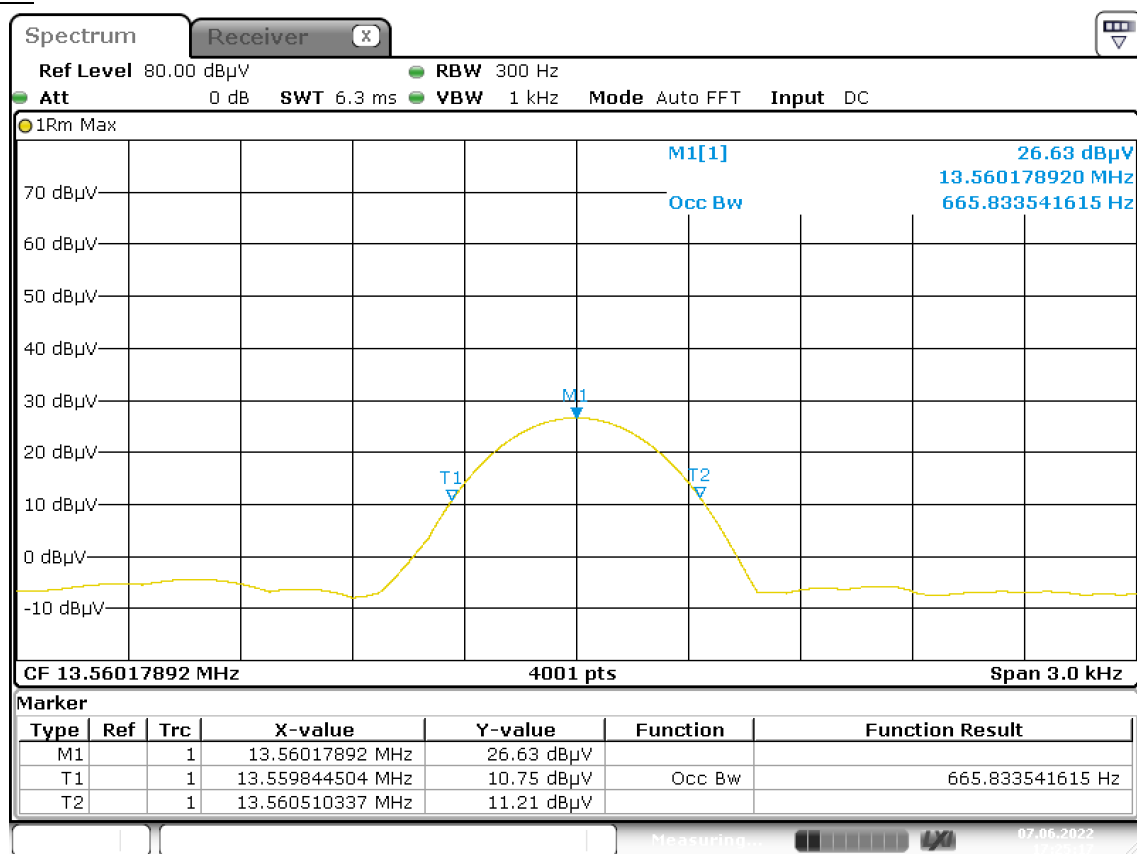
ANNEX A TEST RESULT

A.1 Permitted range of operating frequencies

Test Data

| Test Method | Modulation | Test Conditions | | operating frequencies (kHz) | limit |
|--|--|-----------------|----|-----------------------------|------------------------|
| <input checked="" type="checkbox"/> Radiated <input type="checkbox"/> Conducted | <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF | NT | NV | 13560.17892 | 13553 kHz to 13567 kHz |
| Test Result | | | | Pass | |

Test Plot



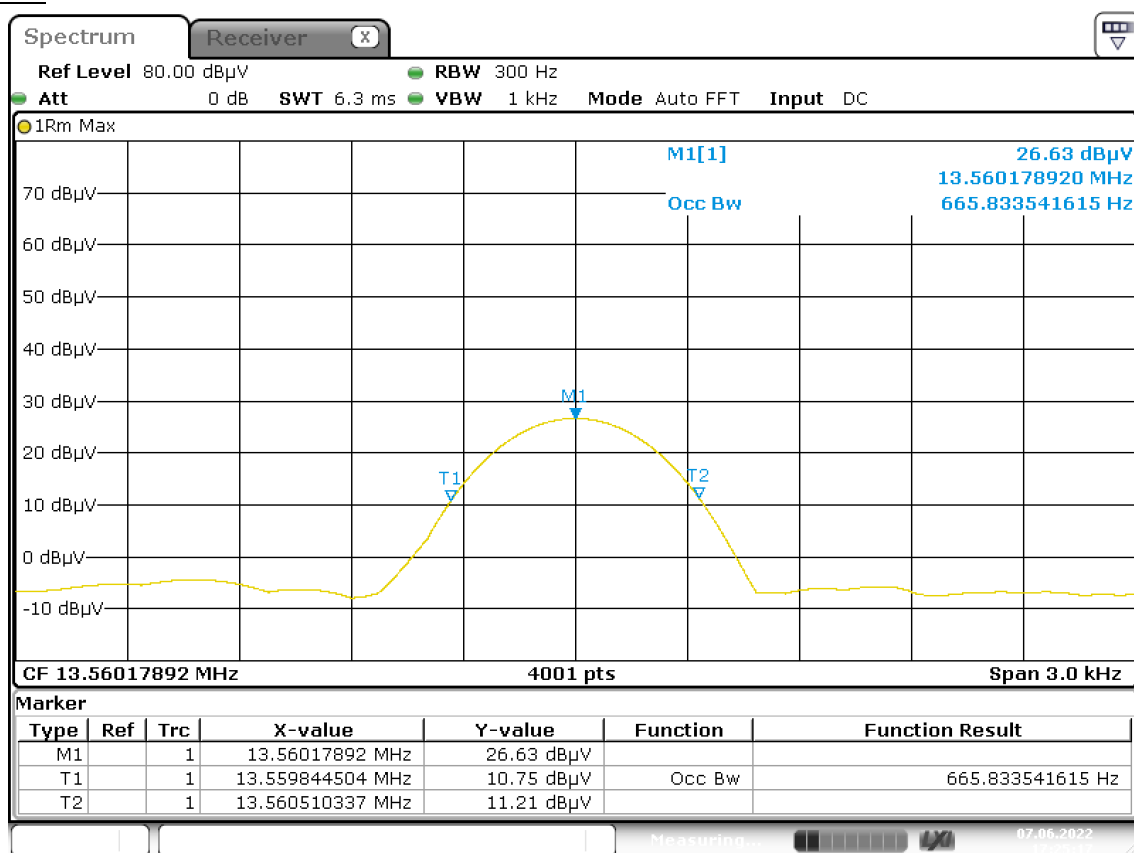
Date: 7.JUN.2022 17:25:18

A.2 Operating frequency ranges

Test Data and Plot

| Test Conditions | | Frequency band | | | |
|-----------------|----|----------------|----------------|----------------|------------------------|
| | | Measured (kHz) | | | Limit |
| | | Low frequency | High frequency | F _c | |
| NT | NV | 13559.84450 | 13560.51034 | 13560.17742 | 13553 kHz to 13567 kHz |
| Test Result | | Pass | | | |

Test Plot



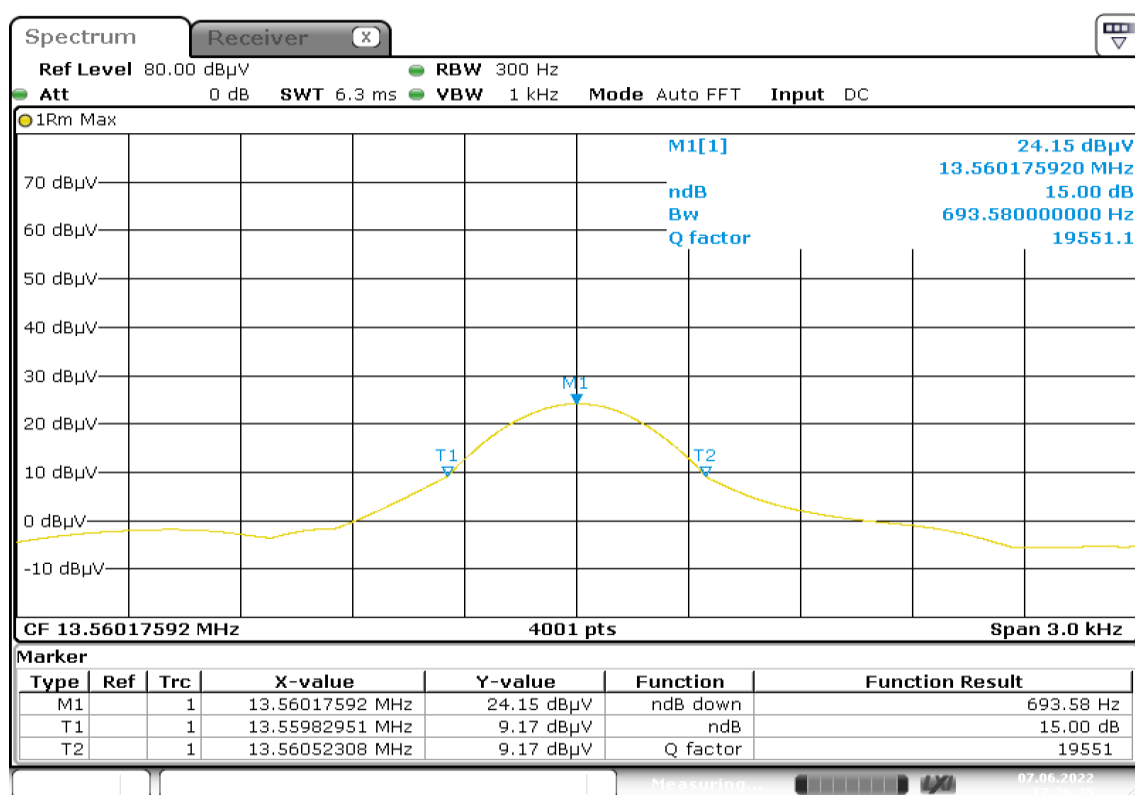
Date: 7.JUN.2022 17:25:18

A.3 Modulation bandwidth

Test Data

| Test Conditions | | Frequency band | | |
|-----------------|----|----------------|----------------|---|
| | | Measured (kHz) | | limit |
| | | Low frequency | High frequency | |
| NT | NV | 13559.82951 | 13560.52308 | Smallest (assigned frequency band, $\pm 7, 5\%$ of the carrier frequency) |
| Test Result | | Pass | | |

Test Plot



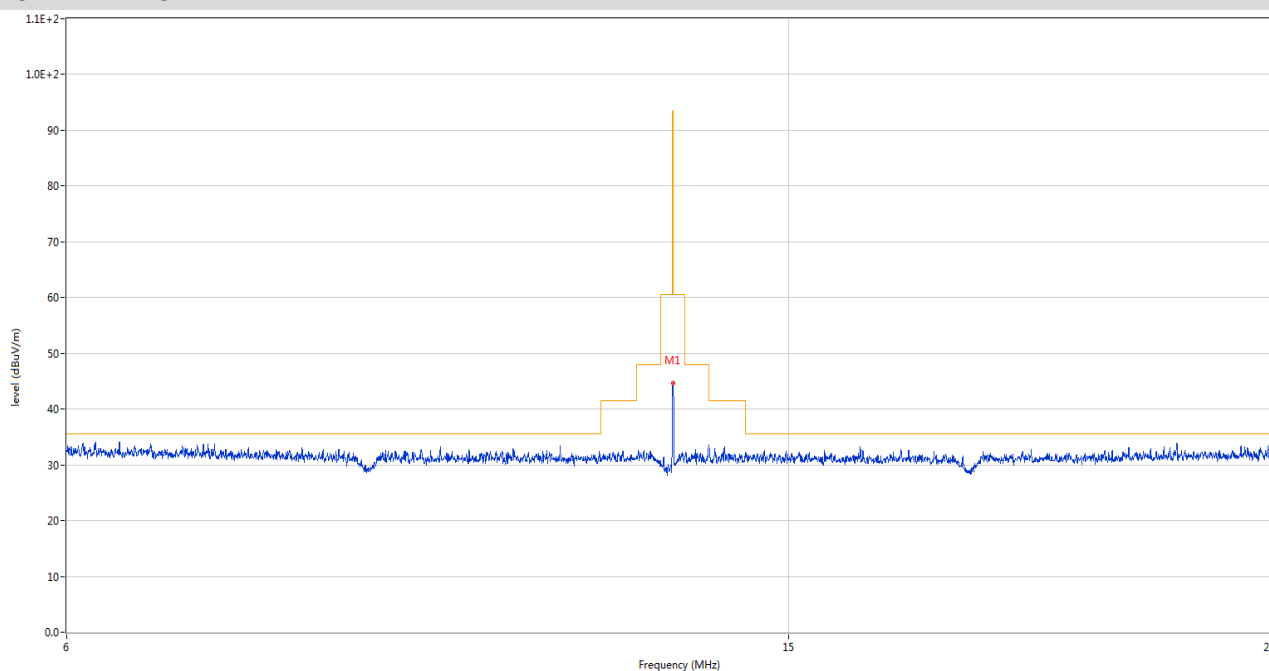
Date: 7.JUN.2022 17:26:34

A.4 Transmitter radiated H-field

Test Data and Plot

| Field Strength of Fundamental Emissions Value | | | | | | |
|---|------------------------------------|------------------------------------|---------------------------|------------------------|----------|---------|
| Frequency (MHz) | Field Strength @10m (dBuV/m) | Field Strength @10m (dBuA/m) | Limit @10m (dBuA/m) | Margin @10m (dB) | Antenna | Verdict |
| 13.560 | 44.64 | -6.86 | 42 | 48.86 | Vertical | Pass |

OPERATING



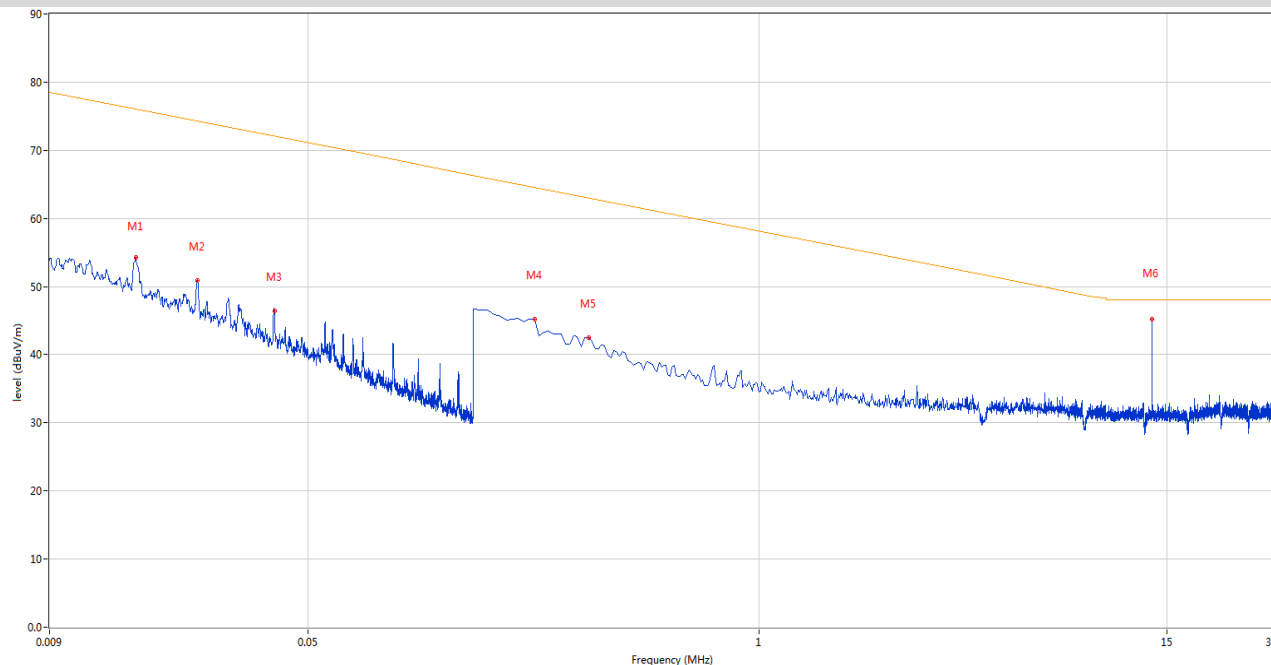
Note: For measuring equipment calibrated in dB μ V, the reading should be reduced by 51.5 dB to be converted to dB μ A/m.

A.5 Transmitter radiated spurious domain emission limits < 30 MHz

Note: This frequency which near 13.560 MHz with circle should be ignored because they are NFC carrier frequency.

Transmitters spurious emissions in the range from 9 kHz to 30 MHz

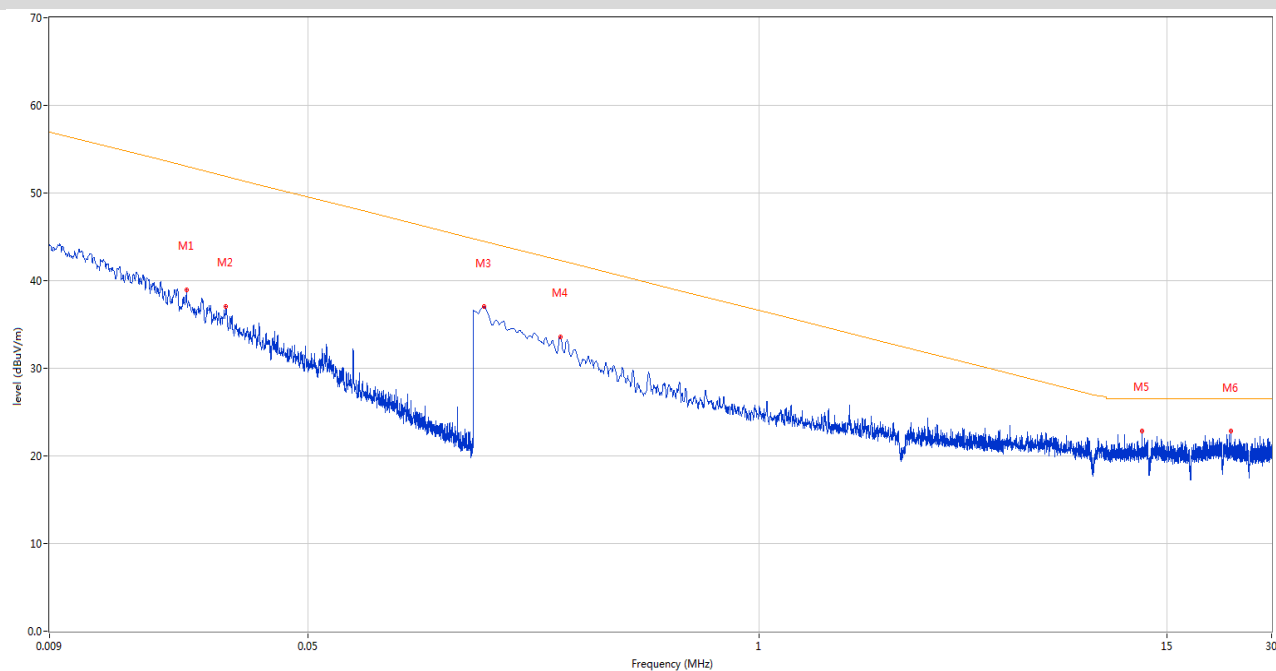
OPERATING ANT-V



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|----------|---------|
| 1 | 0.016 | 54.24 | 20.13 | 76.0 | -21.76 | Peak | 35.00 | 100 | Vertical | Pass |
| 2 | 0.024 | 50.85 | 20.23 | 74.3 | -23.45 | Peak | 0.00 | 100 | Vertical | Pass |
| 3 | 0.040 | 46.62 | 20.22 | 72.0 | -25.38 | Peak | 360.00 | 100 | Vertical | Pass |
| 4 | 0.225 | 45.16 | 20.12 | 64.6 | -19.44 | Peak | 281.00 | 100 | Vertical | Pass |
| 5 | 0.322 | 42.56 | 20.15 | 63.0 | -20.44 | Peak | 175.00 | 100 | Vertical | Pass |
| 6 | 13.560 | 45.27 | 20.86 | 48.0 | -2.73 | Peak | 246.00 | 100 | Vertical | N/A |

Note: For measuring equipment calibrated in dB μ V, the reading should be reduced by 51.5 dB to be converted to dB μ A/m.

STANDBY ANT-V



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|----------|---------|
| 1 | 0.022 | 38.60 | 10.69 | 53.1 | -14.50 | Peak | 135.00 | 100 | Vertical | Pass |
| 2 | 0.029 | 37.00 | 10.68 | 51.9 | -14.90 | Peak | 152.00 | 100 | Vertical | Pass |
| 3 | 0.161 | 37.02 | 10.30 | 44.5 | -7.48 | Peak | 300.00 | 100 | Vertical | Pass |
| 4 | 0.268 | 33.54 | 10.22 | 42.3 | -8.76 | Peak | 194.00 | 100 | Vertical | Pass |
| 5 | 12.681 | 22.83 | 10.17 | 26.5 | -3.67 | Peak | 78.00 | 100 | Vertical | Pass |
| 6 | 22.850 | 22.79 | 10.12 | 26.5 | -3.71 | Peak | 281.00 | 100 | Vertical | Pass |

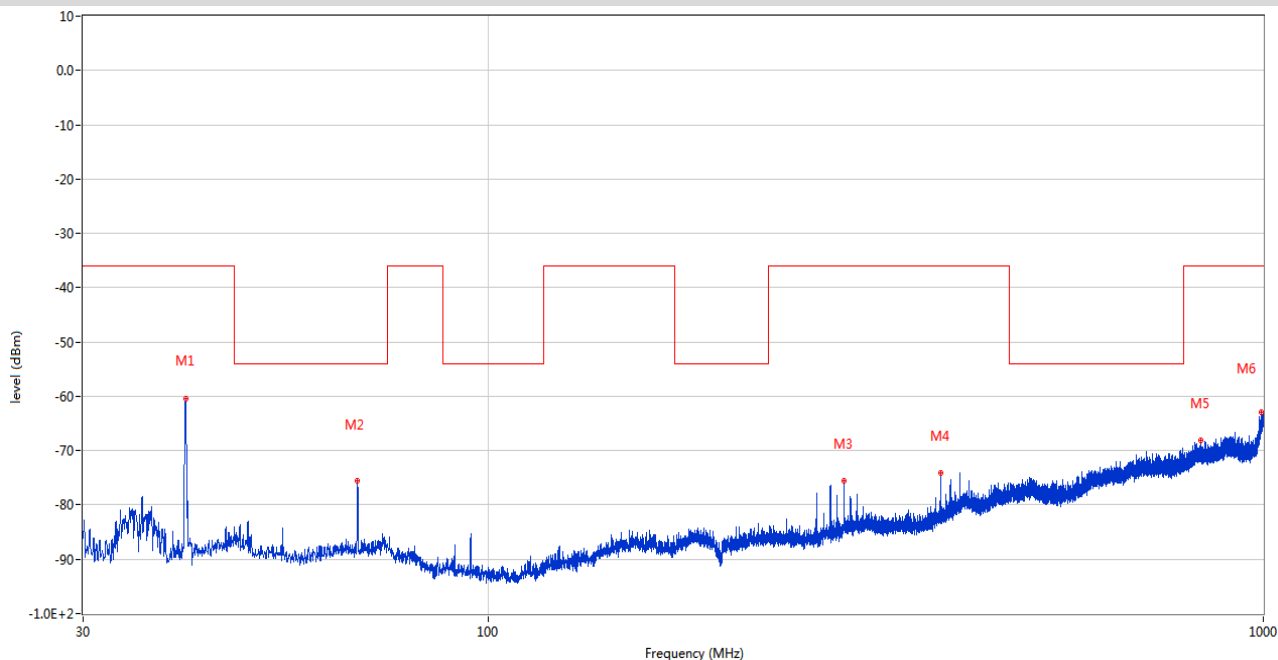
Note: For measuring equipment calibrated in dB μ V, the reading should be reduced by 51.5 dB to be converted to dB μ V/m.

A.6 Transmitter radiated spurious domain emission limits > 30 MHz

Transmitter spurious emissions in the range from 30 MHz to 1 GHz

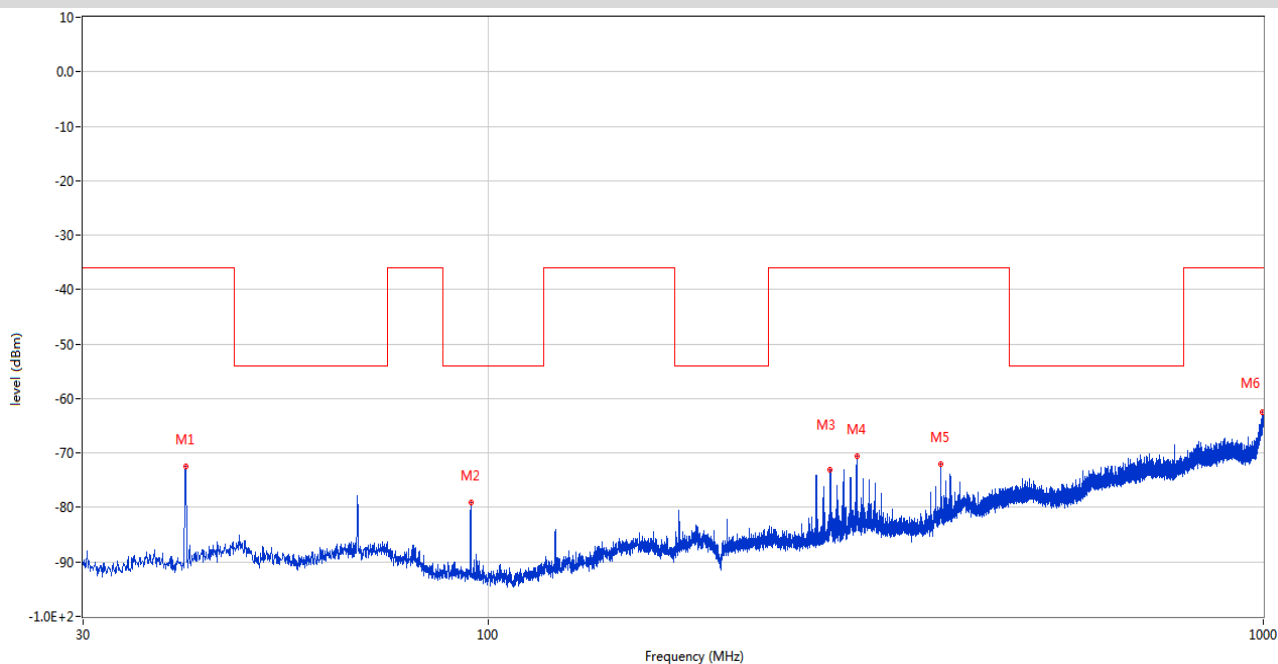
Test Data and Plot

OPERATING ANT-V



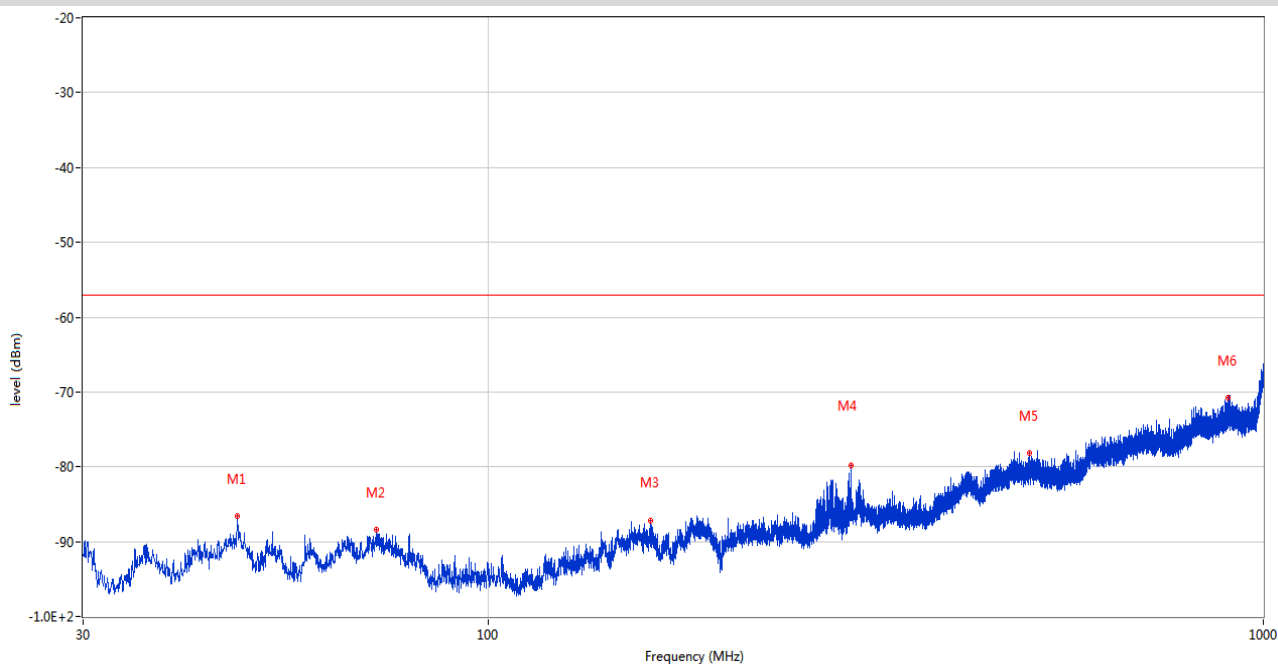
| Frequency (MHz) | Result (dBm) | Factor (dB) | PK Limit (dBm) | Over Limit (dB) | Table (o) | ANT | EUT | Verdict |
|-----------------|--------------|-------------|----------------|-----------------|-----------|----------|------------|---------|
| 40.670 | -60.46 | -18.45 | -36.0 | -24.46 | 145.00 | Vertical | Horizontal | Pass |
| 67.782 | -75.55 | -16.83 | -54.0 | -21.55 | 221.00 | Vertical | Horizontal | Pass |
| 287.535 | -75.55 | -13.60 | -36.0 | -39.55 | 136.00 | Vertical | Horizontal | Pass |
| 383.468 | -74.09 | -11.55 | -36.0 | -38.09 | 210.00 | Vertical | Horizontal | Pass |
| 831.463 | -68.13 | -0.60 | -36.0 | -32.13 | 186.00 | Vertical | Horizontal | Pass |
| 994.617 | -62.90 | 4.66 | -36.0 | -26.90 | 160.00 | Vertical | Horizontal | Pass |

OPERATING ANT-H



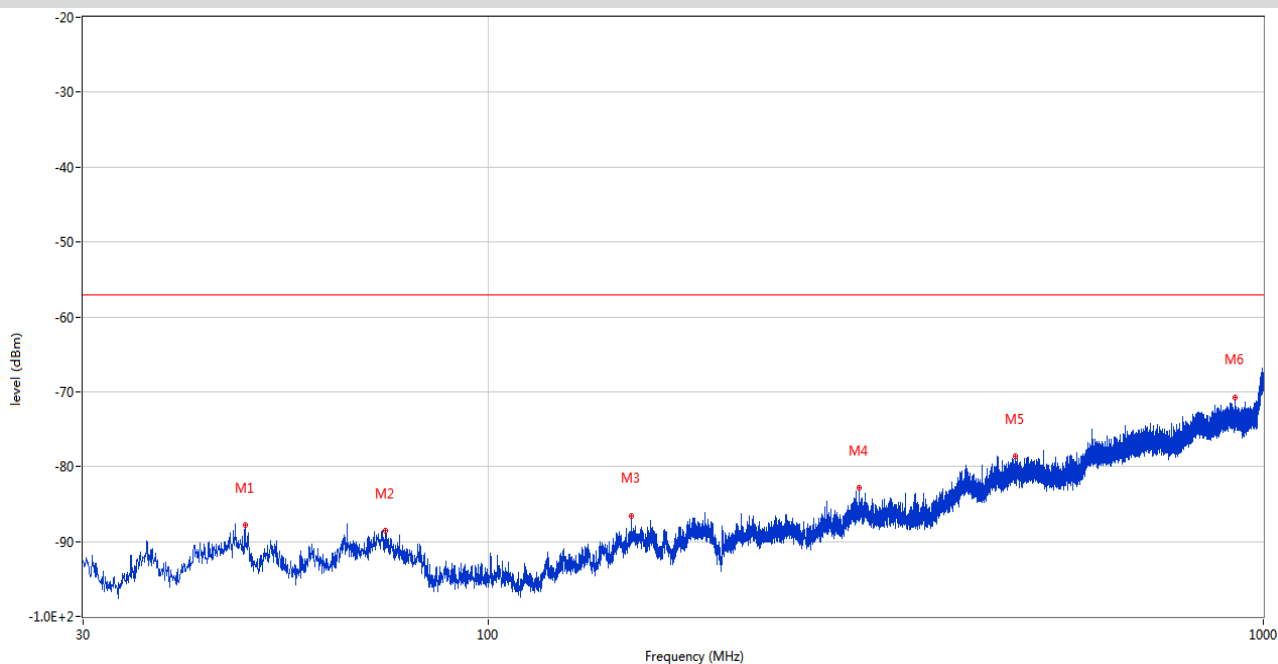
| Frequency (MHz) | Result (dBm) | Factor (dB) | PK Limit (dBm) | Over Limit (dB) | Table (o) | ANT | EUT | Verdict |
|-----------------|--------------|-------------|----------------|-----------------|-----------|------------|------------|---------|
| 40.670 | -72.42 | -18.45 | -36.0 | -36.42 | 354.00 | Horizontal | Horizontal | Pass |
| 94.893 | -79.11 | -21.40 | -54.0 | -25.11 | 59.00 | Horizontal | Horizontal | Pass |
| 276.186 | -73.00 | -14.44 | -36.0 | -37.00 | 149.00 | Horizontal | Horizontal | Pass |
| 298.836 | -70.67 | -12.73 | -36.0 | -34.67 | 141.00 | Horizontal | Horizontal | Pass |
| 383.468 | -72.13 | -11.55 | -36.0 | -36.13 | 1.00 | Horizontal | Horizontal | Pass |
| 998.448 | -62.59 | 5.69 | -36.0 | -26.59 | 152.00 | Horizontal | Horizontal | Pass |

STANDBY ANT-V



| Frequency (MHz) | Result (dBm) | Factor (dB) | PK Limit (dBm) | Over Limit (dB) | Table (o) | ANT | EUT | Verdict |
|-----------------|--------------|-------------|----------------|-----------------|-----------|----------|------------|---------|
| 47.460 | -86.63 | -15.46 | -57.0 | -29.63 | 278.00 | Vertical | Horizontal | Pass |
| 71.710 | -88.44 | -16.48 | -57.0 | -31.44 | 190.00 | Vertical | Horizontal | Pass |
| 161.920 | -87.24 | -16.30 | -57.0 | -30.24 | 155.00 | Vertical | Horizontal | Pass |
| 293.646 | -79.87 | -12.99 | -57.0 | -22.87 | 360.00 | Vertical | Horizontal | Pass |
| 498.655 | -78.20 | -6.66 | -57.0 | -21.20 | 86.00 | Vertical | Horizontal | Pass |
| 901.739 | -70.75 | 0.55 | -57.0 | -13.75 | 42.00 | Vertical | Horizontal | Pass |

STANDBY ANT-H



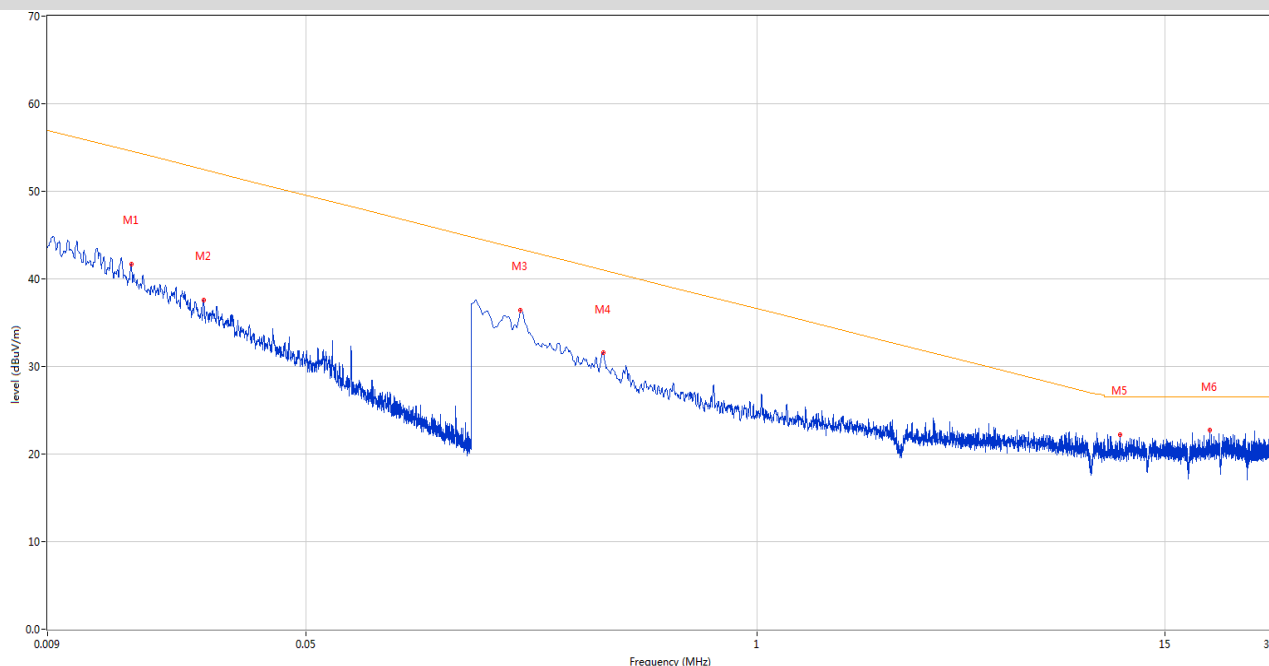
| Frequency (MHz) | Result (dBm) | Factor (dB) | PK Limit (dBm) | Over Limit (dB) | Table (o) | ANT | EUT | Verdict |
|-----------------|--------------|-------------|----------------|-----------------|-----------|------------|------------|---------|
| 48.527 | -87.83 | -15.51 | -57.0 | -30.83 | 326.00 | Horizontal | Horizontal | Pass |
| 73.747 | -88.60 | -17.14 | -57.0 | -31.60 | 205.00 | Horizontal | Horizontal | Pass |
| 153.093 | -86.65 | -16.01 | -57.0 | -29.65 | 166.00 | Horizontal | Horizontal | Pass |
| 301.018 | -82.88 | -12.72 | -57.0 | -25.88 | 201.00 | Horizontal | Horizontal | Pass |
| 479.304 | -78.64 | -7.24 | -57.0 | -21.64 | 235.00 | Horizontal | Horizontal | Pass |
| 920.363 | -70.84 | 0.58 | -57.0 | -13.84 | 109.00 | Horizontal | Horizontal | Pass |

A.7 Receiver spurious emissions

Receiver spurious emissions in the range from 9 kHz to 30 MHz

Test Data and Plot

RX ANT-V



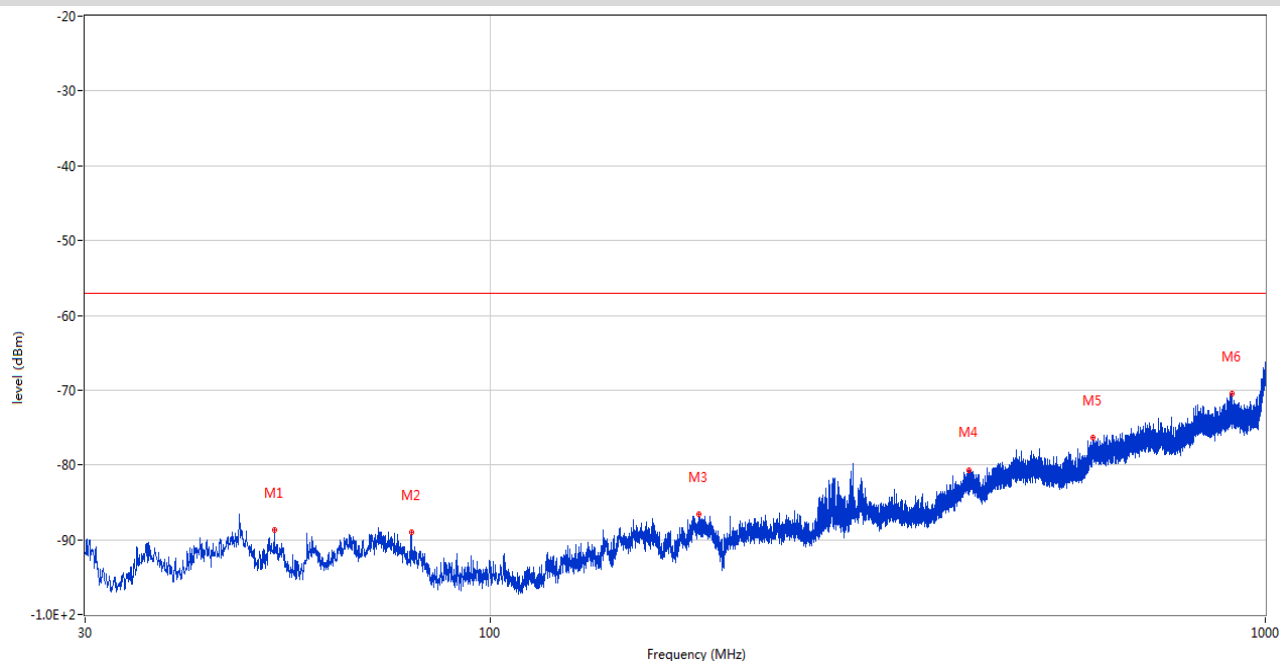
| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|----------|---------|
| 1 | 0.016 | 41.69 | 10.65 | 54.6 | -12.91 | Peak | 160.00 | 100 | Vertical | Pass |
| 2 | 0.025 | 37.61 | 10.69 | 52.5 | -14.89 | Peak | 124.00 | 100 | Vertical | Pass |
| 3 | 0.208 | 36.43 | 10.26 | 43.4 | -6.97 | Peak | 25.00 | 100 | Vertical | Pass |
| 4 | 0.360 | 31.53 | 10.16 | 41.0 | -9.47 | Peak | 43.00 | 100 | Vertical | Pass |
| 5 | 11.119 | 22.21 | 10.11 | 26.5 | -4.29 | Peak | 335.00 | 100 | Vertical | Pass |
| 6 | 20.156 | 22.76 | 10.19 | 26.5 | -3.74 | Peak | 10.00 | 100 | Vertical | Pass |

Note: For measuring equipment calibrated in dB μ V, the reading should be reduced by 51.5 dB to be converted to dB μ A/m.

Receiver spurious emissions in the range from 30 MHz to 1 GHz

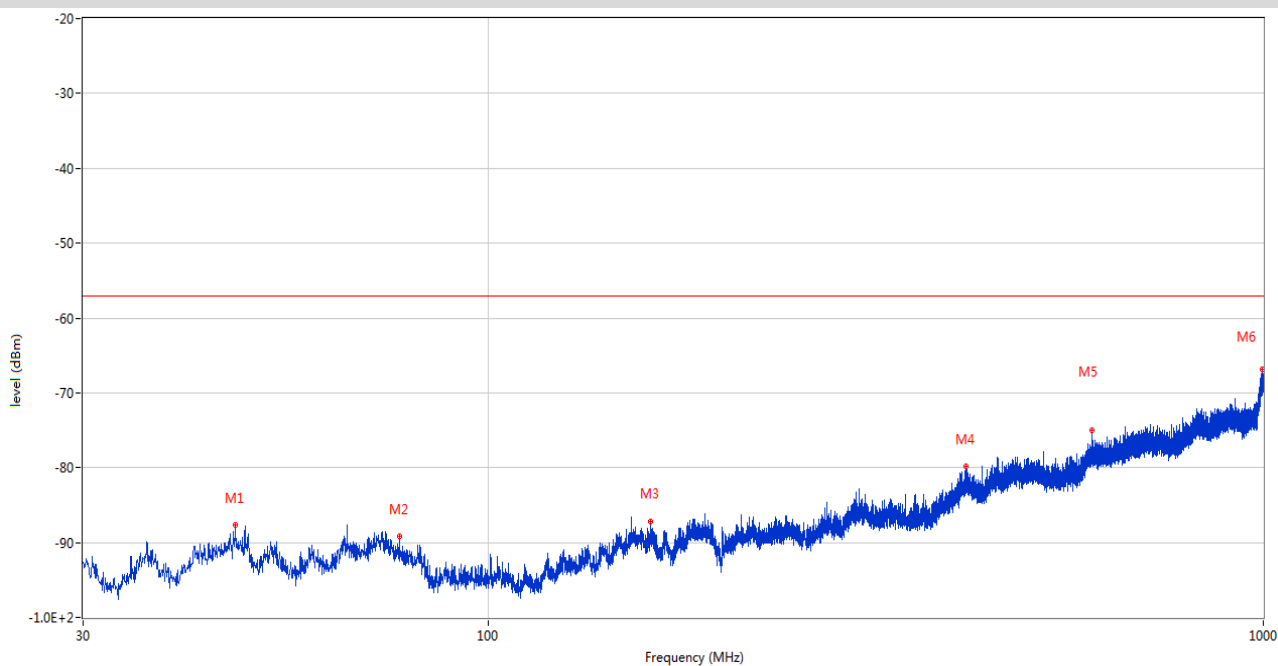
Test Data and Plots

RX ANT-V



| Frequency (MHz) | Result (dBm) | Factor (dB) | PK Limit (dBm) | Over Limit (dB) | Table (o) | ANT | EUT | Verdict |
|-----------------|--------------|-------------|----------------|-----------------|-----------|----------|------------|---------|
| 52.650 | -88.73 | -17.57 | -57.0 | -31.73 | 236.00 | Vertical | Horizontal | Pass |
| 79.082 | -89.04 | -18.35 | -57.0 | -32.04 | 155.00 | Vertical | Horizontal | Pass |
| 185.782 | -86.52 | -15.14 | -57.0 | -29.52 | 178.00 | Vertical | Horizontal | Pass |
| 414.217 | -80.67 | -8.68 | -57.0 | -23.67 | 73.00 | Vertical | Horizontal | Pass |
| 599.293 | -76.37 | -4.58 | -57.0 | -19.37 | 217.00 | Vertical | Horizontal | Pass |
| 906.977 | -70.53 | 0.56 | -57.0 | -13.53 | 144.00 | Vertical | Horizontal | Pass |

RX ANT-H



| Frequency (MHz) | Result (dBm) | Factor (dB) | PK Limit (dBm) | Over Limit (dB) | Table (o) | ANT | EUT | Verdict |
|-----------------|--------------|-------------|----------------|-----------------|-----------|------------|------------|---------|
| 47.169 | -87.57 | -15.62 | -57.0 | -30.57 | 20.00 | Horizontal | Horizontal | Pass |
| 76.705 | -89.18 | -17.91 | -57.0 | -32.18 | 341.00 | Horizontal | Horizontal | Pass |
| 162.066 | -87.14 | -16.31 | -57.0 | -30.14 | 286.00 | Horizontal | Horizontal | Pass |
| 413.732 | -79.86 | -8.66 | -57.0 | -22.86 | 360.00 | Horizontal | Horizontal | Pass |
| 601.864 | -74.96 | -4.67 | -57.0 | -17.96 | 62.00 | Horizontal | Horizontal | Pass |
| 995.538 | -66.89 | 4.84 | -57.0 | -9.89 | 124.00 | Horizontal | Horizontal | Pass |

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2260020-AE-2.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2260020-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2260020-AI.PDF”.

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